

## A

## Zone 1: codons 1 to 10

	1 RNT	2 NAS	3 RNT	4 NAS	5 NAS	6 NYC	7 RNT	8 RNA	9 RNT	10 RNT	(SEQ ID NO. 139)
L i b r a r y	A D G I N S T	D E H K N Q Y	A D G I N S T	D E H K N Q Y	D E H K N Q Y	A F I L P S T	A D G I N S T	A E G I K R T	A D G I N S T	A D G I N S T	
wt	GCC A	GAG E	GGT G	GAC D	GAT D	CCC P	GCA A	AAA K	GCG A	GCC A	(SEQ ID NO. 140) (SEQ ID NO. 141)
1 a	GAT D	AAG K	ACT S	GAG E	AAG K	TTC F	GCT A	AGA R	GAT D	GCT A	(SEQ ID NO. 142) (SEQ ID NO. 143)
1 b	AAT I	AAG K	GAT D	GAG E	CAG Q	TTC F	GCT A	AGA R	GCT A	GCT A	(SEQ ID NO. 144) (SEQ ID NO. 145)
1 c	ATT I	TAC Y	ATT I	AAG K	GAG E	ACC T	AGT S	AAA K	AAT N	GCT A	(SEQ ID NO. 146) (SEQ ID NO. 147)
1 d	AAT N	TAC Y	GTT V	GAC D	CAG Q	GTC V	AGT S	AAA K	AAT N	GCT A	(SEQ ID NO. 148) (SEQ ID NO. 149)
1 e	GCT A	AAG K	GCT A	GAG E	GAG E	TTC F	GCT A	GAA E	GCT A	GCT A	(SEQ ID NO. 150) (SEQ ID NO. 151)
1 f	GCT A	GAC D	ATT I	GAC D	GAC D	TTC F	GCT A	AGA R	AGT S	GCT A	(SEQ ID NO. 152) (SEQ ID NO. 153)

Figure 1A

## B

## Zone 2: codons 11 to 20

Library	11	12	13	14	15	16	17	18	19	20	(SEQ ID NO. 154)
	NWT	NAS	RNT	NYT	NAS	RNT	RNT	RNT	RNT	NAS	
wt	TTT	AAC	TCC	CTG	CAA	GCC	TCA	CGG	ACC	GAA	(SEQ ID NO. 155)
	F	N	S	L	Q	A	S	A	T	E	(SEQ ID NO. 156)
2a	TAT	GAG	GCT	CTT	GAG	GAT	ATT	GCT	ACT	AAC	(SEQ ID NO. 157)
	Y	E	A	L	E	D	I	A	T	N	(SEQ ID NO. 158)
2b	TAT	GAG	GCT	CTT	GAG	GAT	ATT	GCT	ACT	AAC	(SEQ ID NO. 159)
	Y	E	A	L	E	D	I	A	T	N	(SEQ ID NO. 160)
2c	TAT	GAG	GCT	CTT	GAG	GAT	ATT	GCT	ACT	AAC	(SEQ ID NO. 161)
	Y	E	A	L	E	D	I	A	T	N	(SEQ ID NO. 162)
2d	TAT	GAC	GTT	CTT	CAG	ATT	GCT	GCT	ATT	AAC	(SEQ ID NO. 163)
	Y	D	V	L	Q	I	A	A	I	N	(SEQ ID NO. 164)
2e*	CTT	AAG	GAT	CTT	AAG	GCT	ACT	GTT	ATT	CAG	(SEQ ID NO. 165)
	L	K	D	L	K	A	T	V	I	Q	(SEQ ID NO. 166)
2f*	TAT	GAG	ACT	ATT	AAG	GAT	GAT	ATT	GTT	AAG	(SEQ ID NO. 167)
	Y	E	T	I	K	D	D	I	V	K	(SEQ ID NO. 168)
2g*	CTT	CAG	AAT	ATT	CAC	AGT	AGT	ATT	AGT	AAG	(SEQ ID NO. 169)
	L	Q	N	I	H	S	S	I	S	K	(SEQ ID NO. 170)
2h*	TAT	AAG	ACT	GTT	CAG	GGT	GCT	ATT	GCT	AAG	(SEQ ID NO. 171)
	Y	K	T	V	Q	G	A	I	A	K	(SEQ ID NO. 172)
2i*	TAT	AAG	ACT	ATT	AAG	AGT	ATT	GCT	AAT	AAG	(SEQ ID NO. 173)
	Y	K	T	I	K	S	I	A	N	K	(SEQ ID NO. 174)
2j*	TAT	TAG	AGT	CTT	CAG	ATT	ATT	GCT	GCT	CAG	(SEQ ID NO. 175)
	Y	Q	S	L	Q	I	I	A	A	Q	(SEQ ID NO. 176)
2k*	TTT	CAG	AGT	CTT	AAG	GAT	ACT	GCT	GAT	GAG	(SEQ ID NO. 177)
	F	Q	S	L	K	D	T	A	D	E	(SEQ ID NO. 178)
2m*	TTT	GAG	AAT	CTT	TAG	GCT	ACT	ATT	ACT	AAG	(SEQ ID NO. 179)
	F	E	N	L	Q	A	T	I	T	K	(SEQ ID NO. 180)

Figure 1B

## C

## Zone 3: codons 21 to 30

	21 NWC	22 NWC	23 NKT	24 NWC	25 NYT	26 NKG	27 NYT	28 NKG	29 NWT	30 NWT (SEQ ID NO. 181)
L	D	D	C	D	A	G	A	G	D	D
i	F	F	F	F	F	L	F	L	F	F
b	H	H	G	H	I	M	I	M	H	H
r	I	I	I	I	L	R	L	R	I	I
a	L	L	L	L	P	V	P	V	L	L
r	N	N	R	N	S	W	S	W	N	N
y	V	V	S	V	T		T	V	V	V
	Y	Y	V	Y	V		V	Y	Y	Y

wt	TAT	ATC	GGT	TAT	GGG	TGG	GGG	ATG	GTT	GTT (SEQ ID NO. 182)
	Y	I	G	Y	A	W	A	M	V	V (SEQ ID NO. 183)
3 a	CTT	TTC	TTT	CTC	CTT	GGG	ACT	GTG	CAT	CTT (SEQ ID NO. 184)
	L	F	F	L	L	G	T	V	H	L (SEQ ID NO. 185)
3 b	TAC	TAC	CTT	AAC	ATT	TTG	GCT	GTG	TAT	GTT (SEQ ID NO. 186)
	Y	Y	L	N	I	L	A	V	Y	V (SEQ ID NO. 187)
3 c	TTC	ATC	CGT	GTC	ACT	TGG	ACT	ATG	TAT	GTT (SEQ ID NO. 188)
	F	I	R	V	T	W	T	M	Y	V (SEQ ID NO. 189)
3 d	GTC	ATC	CGT	TAC	GTT	ATG	TCT	ATG	TAT	GTT (SEQ ID NO. 190)
	V	I	R	Y	V	M	S	M	Y	V (SEQ ID NO. 191)

Figure 1C

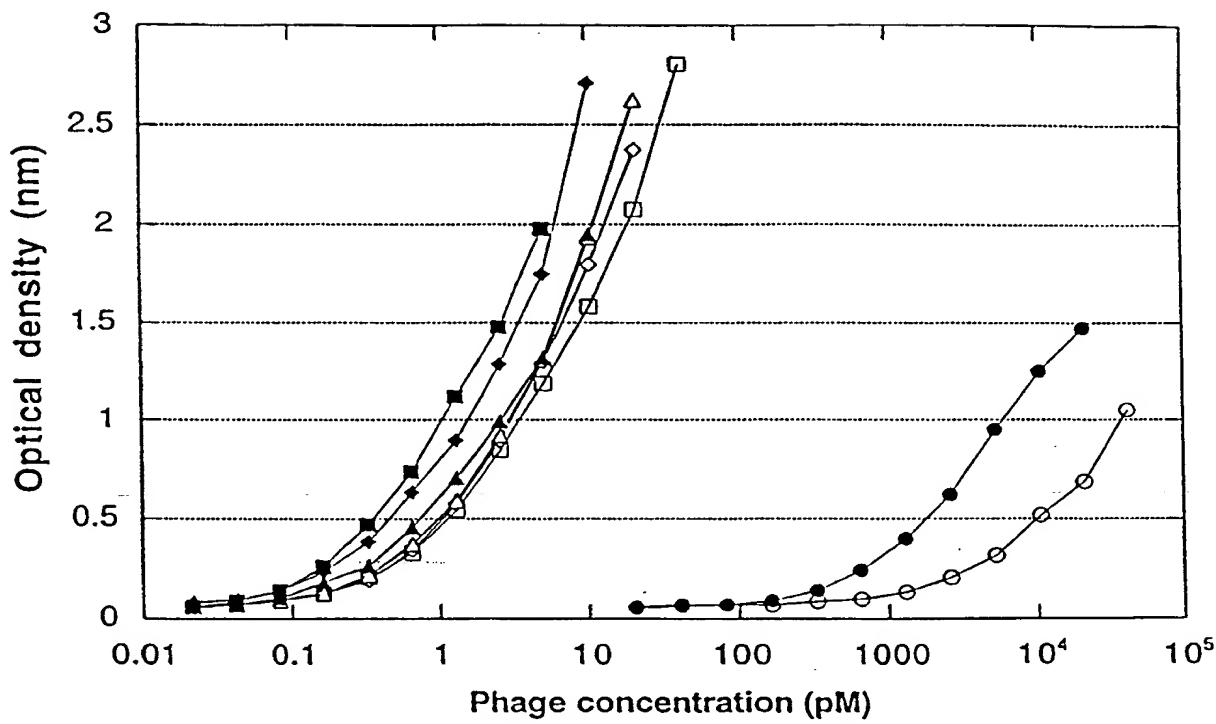


Figure 2

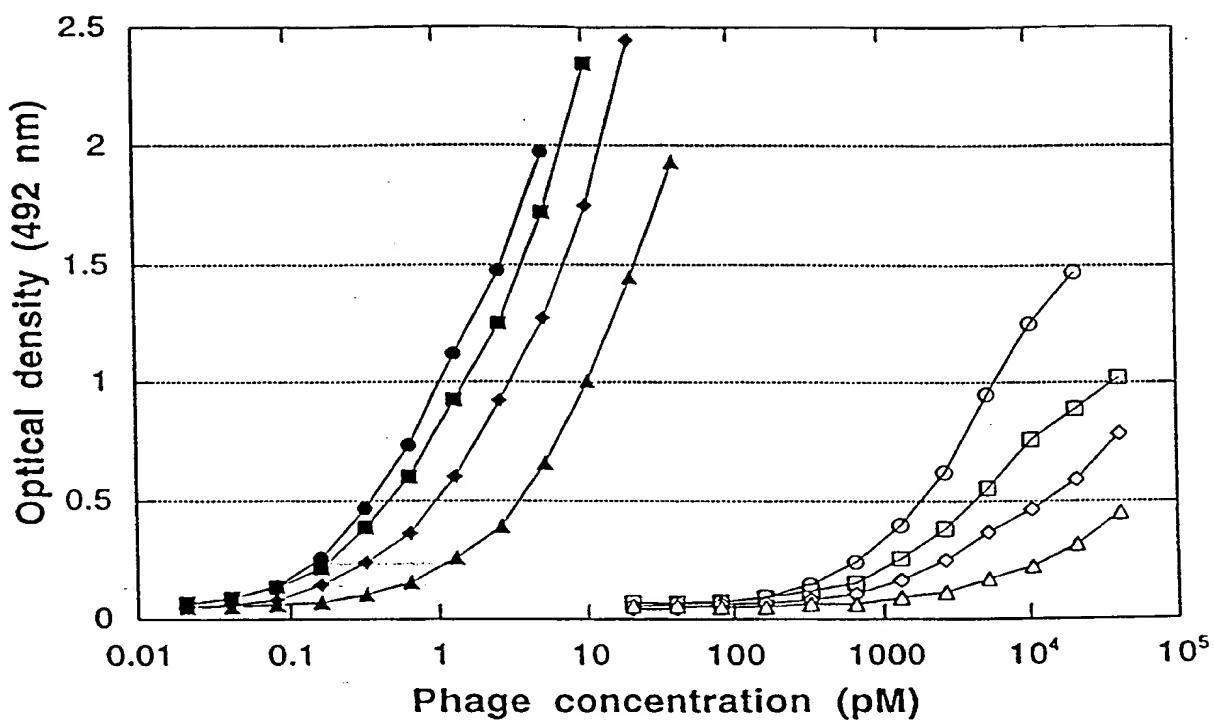


Figure 3

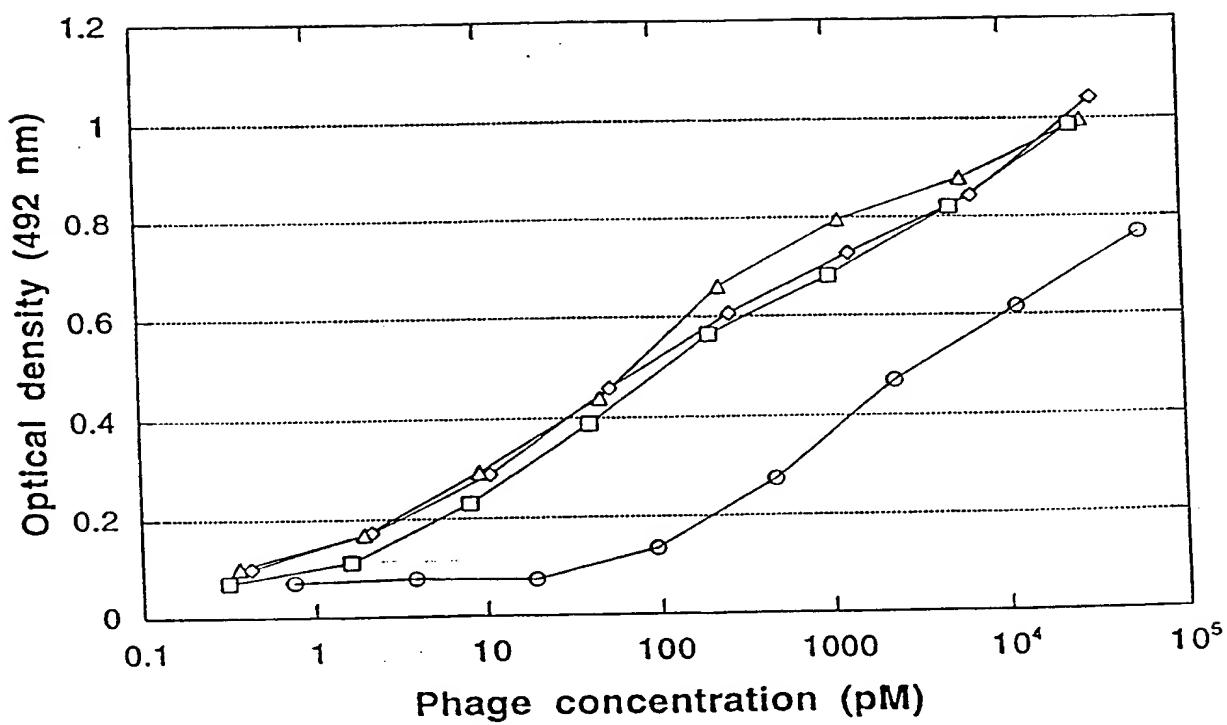


Figure 4A

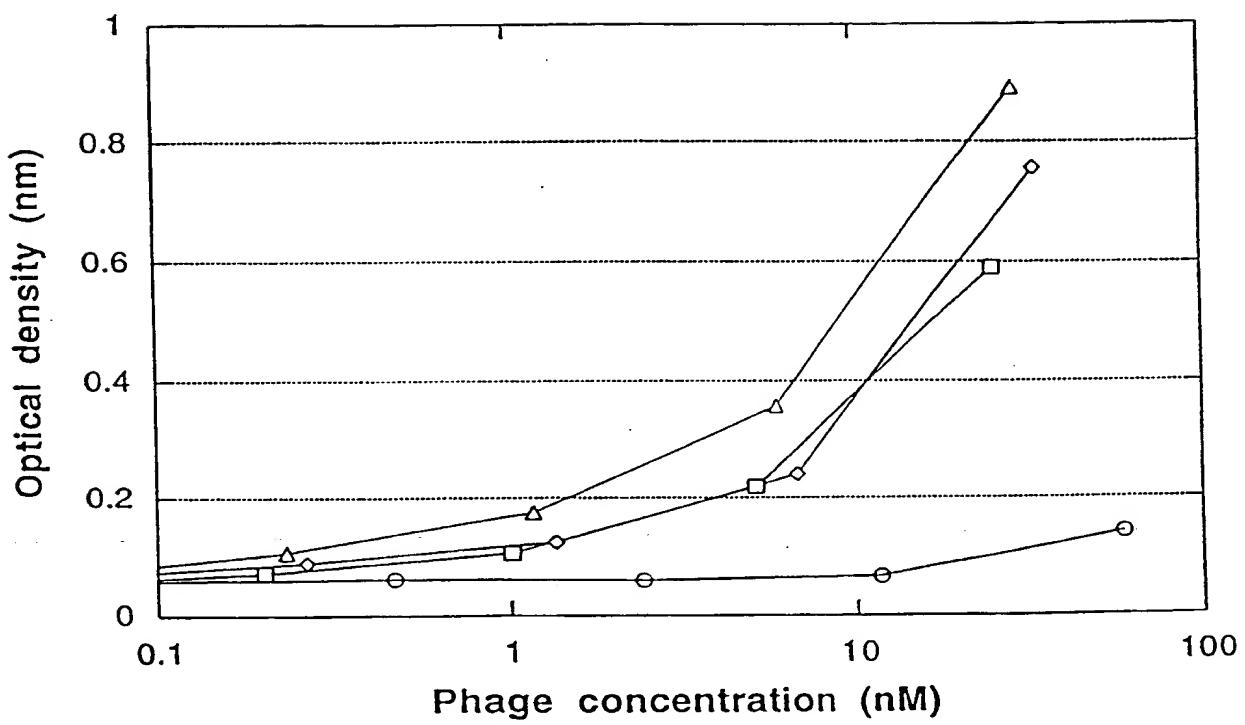


Figure 4B

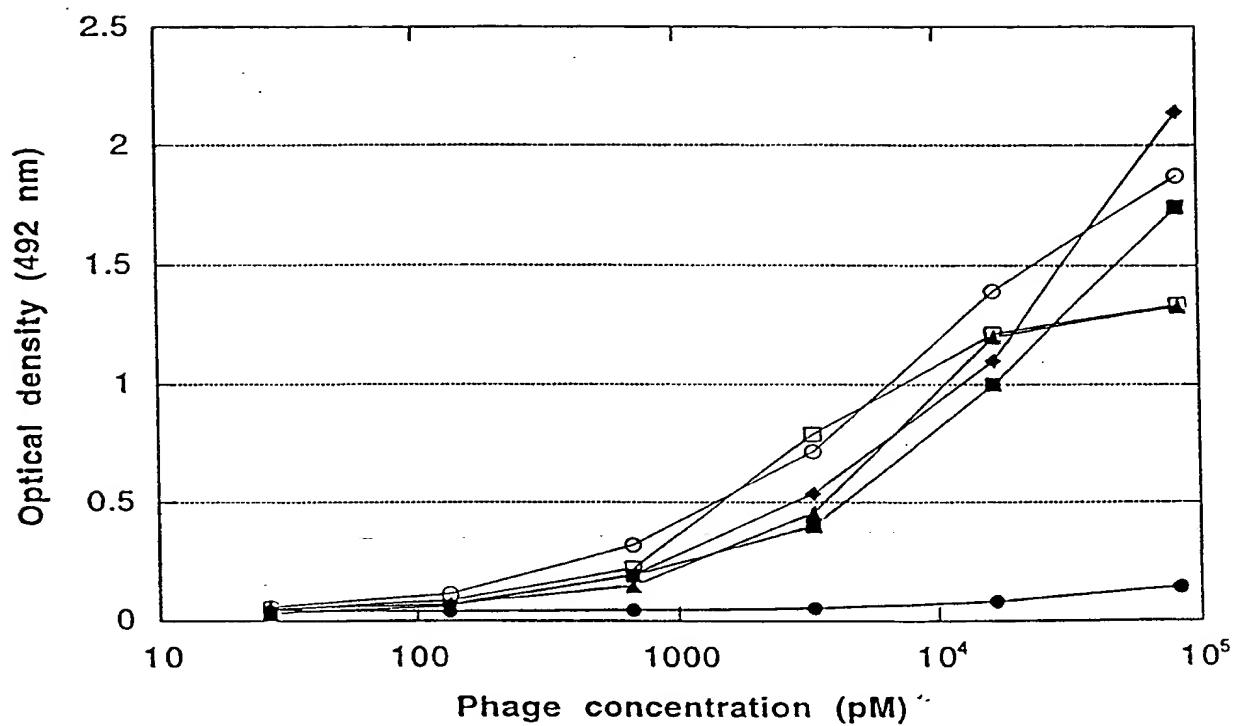


Figure 5

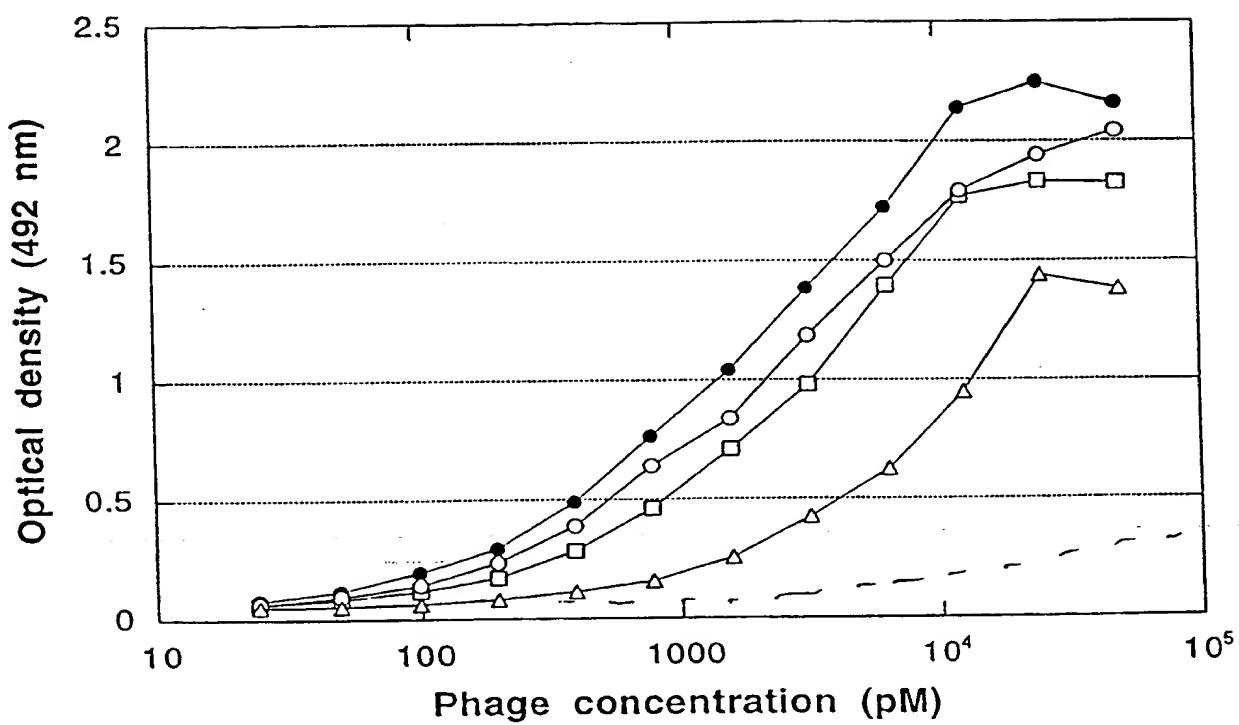


Figure 6

**A**

Link1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	GAC	GGC	AGC	AAC	AGC	AGC	CAC	H	P	CAC	H	N	R	GGC
	D	G	S	N	S	T	H	P	CAC	GAC	R	CAC	R	R
Link2	AGC	GGC	GGC	CAC	GGC	AAC	GAC	AAC	GAC	GGC	GGC	GGC	GGC	GGC
	T	A	R	H	A	N	D	N	A	G	G	A	A	(SEQ. ID NO. 197)
Link3	AGC	CAC	GGC	AAC	GGC	GGC	AAC	GGC						
	T	H	P	N	P	R	P	R	A	P	A	A	P	(SEQ. ID NO. 193)
Link4	CAC	GGC	AAC	GGC	GGC	AGC	GAC	GGC						
	H	R	N	G	T	D	P	G	G	P	R	A	P	(SEQ. ID NO. 194)
Link5	GGC	GGC	GGC	GAC	GGC	AGC	GGC							
	A	P	R	D	T	A	H	R	T	A	C	A	C	(SEQ. ID NO. 195)
Link6	GGC	GGC	AGC	GGC	GGC	AGC	GGC							
	P	R	S	A	R	S	R	N	D	A	H	C	H	(SEQ. ID NO. 196)
Link7	AGC	GGC	GGC	GAC	GGC	AGC	AGC	AGC	AGC	GGC	GGC	GGC	GGC	GGC
	T	A	P	D	R	S	S	N	T	A	H	A	P	(SEQ. ID NO. 197)
Link8	GGC	AGC	GGC	AGC	AAC	GGC								
	G	S	P	S	N	P	G	A	R	T	R	A	T	(SEQ. ID NO. 198)
Link9	GGC	CAC	GGC	GGC	CAC	GGC	CAC	GGC	CAC	GGC	CAC	GGC	GGC	GGC
	G	H	A	G	H	P	H	R	P	R	C	P	A	(SEQ. ID NO. 199)

Figure 7A

B

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Link10	ACC	A	ACC																						
Link11	ACC	R	ACC	R	ACC	R	ACC	R	ACC	R	ACC	R	ACC	R	ACC	R	ACC	R	ACC	R	ACC	R	ACC	R	ACC
Link12	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC
Link13	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC
Link14	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC
Link15	ACC	N	ACC	O	ACC	N	ACC	O	ACC	N	ACC	O	ACC	N	ACC	O	ACC	N	ACC	O	ACC	N	ACC	O	ACC
Link16	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC
Link17	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC
Link18	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC
Link19	ACC	T	ACC	R	ACC	T	ACC	R	ACC	T	ACC	R	ACC	T	ACC	R	ACC	T	ACC	R	ACC	T	ACC	R	ACC
Link20	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC
Link21	ACC	A	ACC	R	ACC	A	ACC	R	ACC	A	ACC	R	ACC	A	ACC	R	ACC	A	ACC	R	ACC	A	ACC	R	ACC
Link22	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC
Link23	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC
Link24	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC
Link25	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC
Link26	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC	R	ACC	O	ACC
Link27	ACC	A	ACC	S	ACC	R	ACC	O	ACC	N	ACC	O	ACC	R	ACC	O	ACC	N	ACC	O	ACC	R	ACC	O	ACC
Link28	ACC	T	ACC	G	ACC	R	ACC	O	ACC	N	ACC	O	ACC	R	ACC	O	ACC	N	ACC	O	ACC	R	ACC	O	ACC
Link29	ACC	R	ACC	A	ACC	R	ACC	O	ACC	N	ACC	O	ACC	R	ACC	O	ACC	N	ACC	O	ACC	R	ACC	O	ACC
Link30	ACC	S	ACC	O	ACC	S	ACC	O	ACC	S	ACC	O	ACC	S	ACC	O	ACC	S	ACC	O	ACC	S	ACC	O	ACC
Link31	ACC	R	ACC	O	ACC	S	ACC	O	ACC	R	ACC	O	ACC	S	ACC	O	ACC	R	ACC	O	ACC	S	ACC	O	ACC
Link32	ACC	D	ACC	O	ACC	G	ACC	O	ACC	D	ACC	O	ACC	G	ACC	O	ACC	D	ACC	O	ACC	H	ACC	S	ACC
Link33	ACC	S	ACC	O	ACC	S	ACC	O	ACC	S	ACC	O	ACC	S	ACC	O	ACC	S	ACC	O	ACC	D	ACC	O	ACC
Link34	ACC	R	ACC	S	ACC	R	ACC	O	ACC	S	ACC	O	ACC	R	ACC	O	ACC	S	ACC	O	ACC	R	ACC	O	ACC
Link35	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC
Link36	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC
Link37	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC	S	ACC	H	ACC

Figure 7B

PCTUS

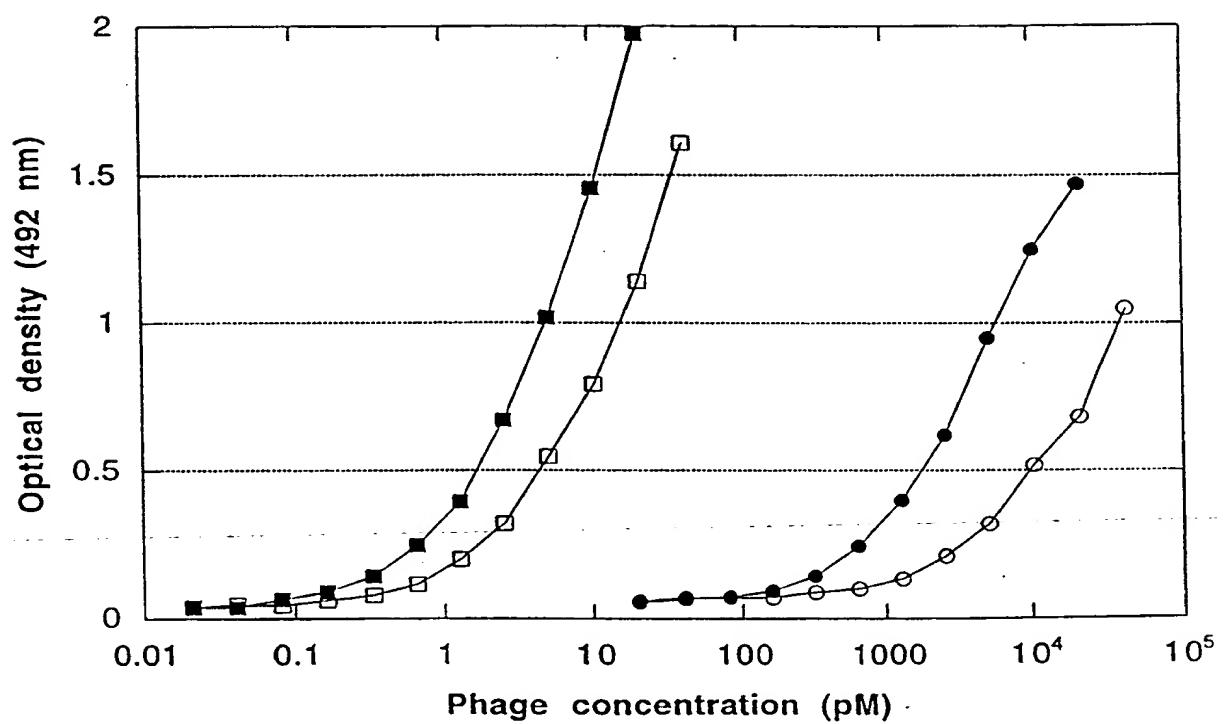


Figure 8A

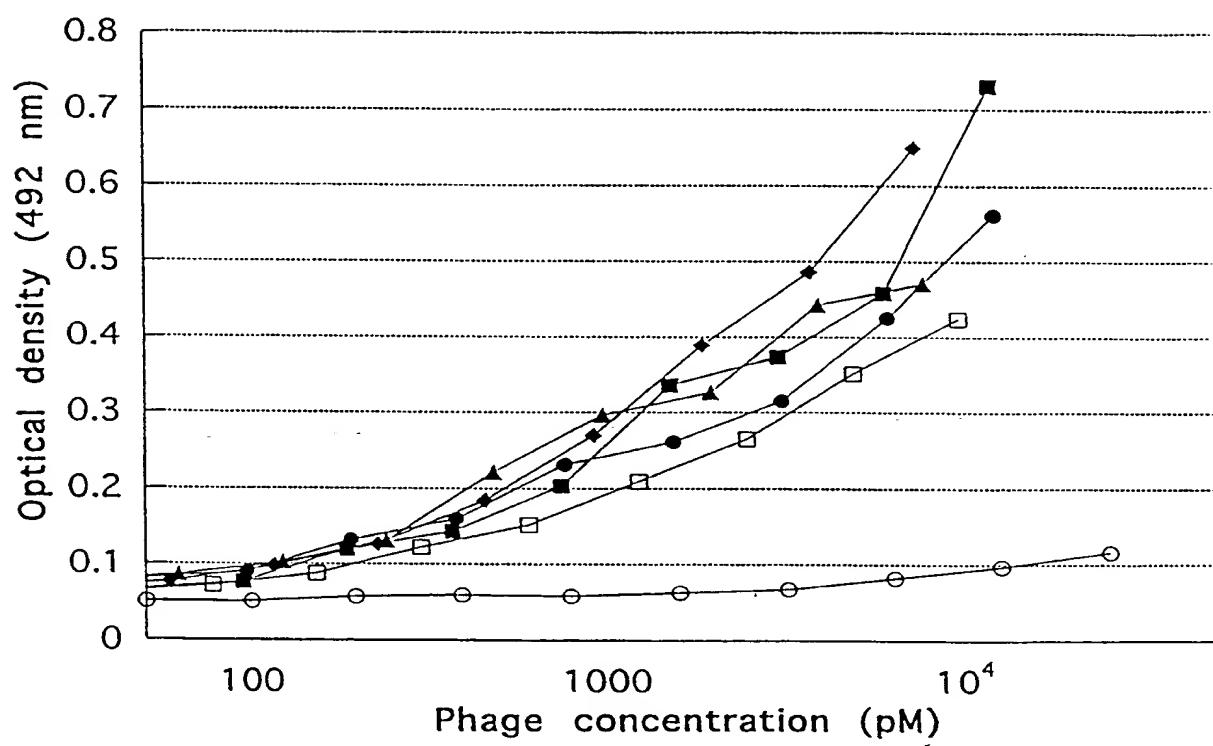


Figure 8B

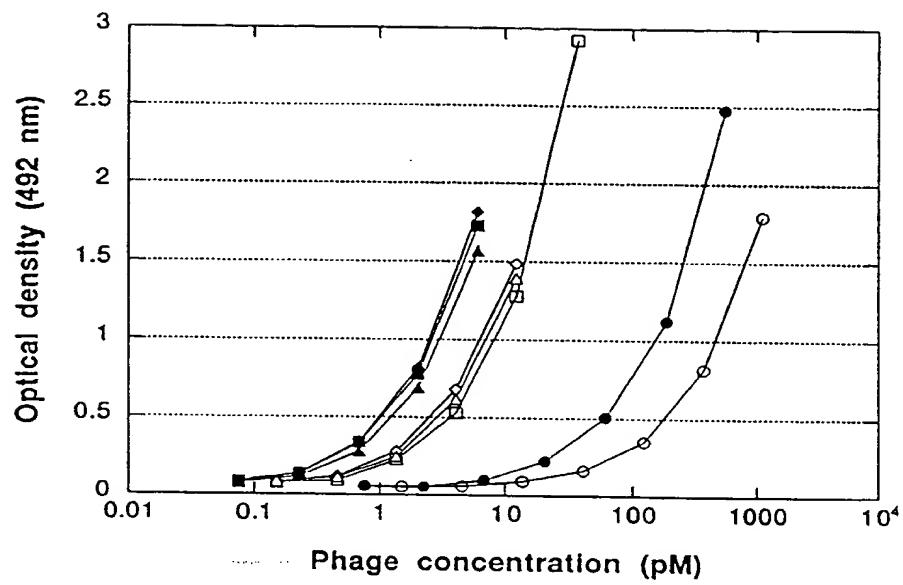


Figure 9

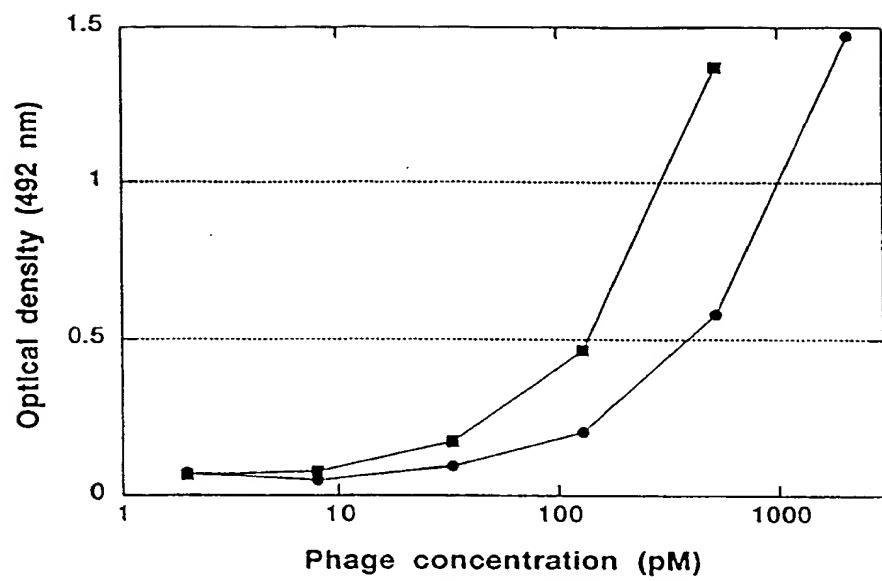


Figure 10

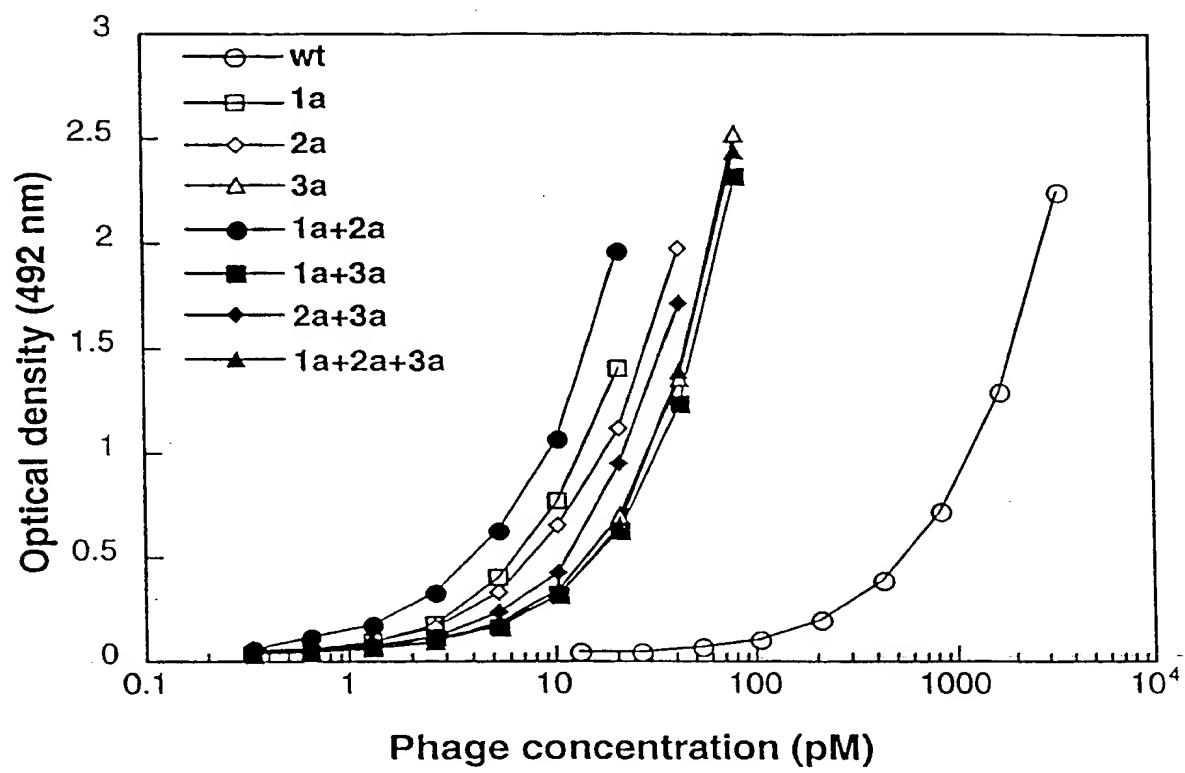


Figure 11

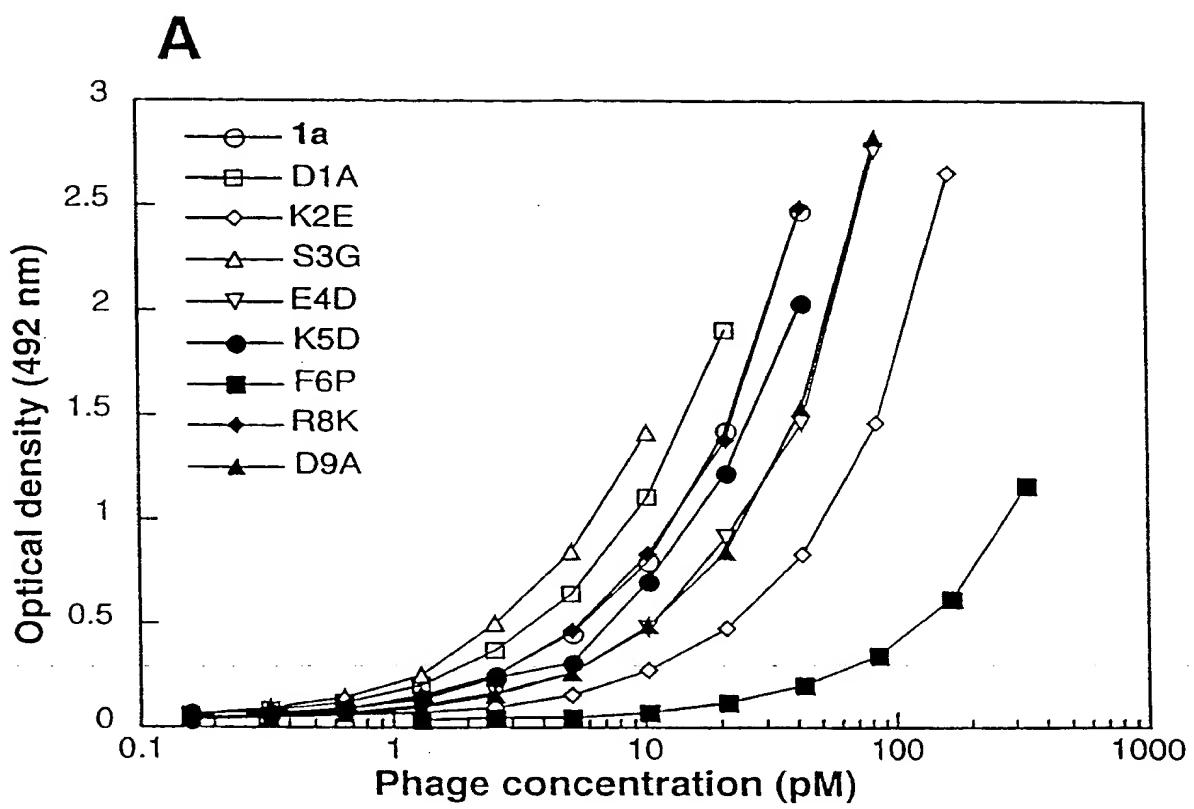


Figure 12A

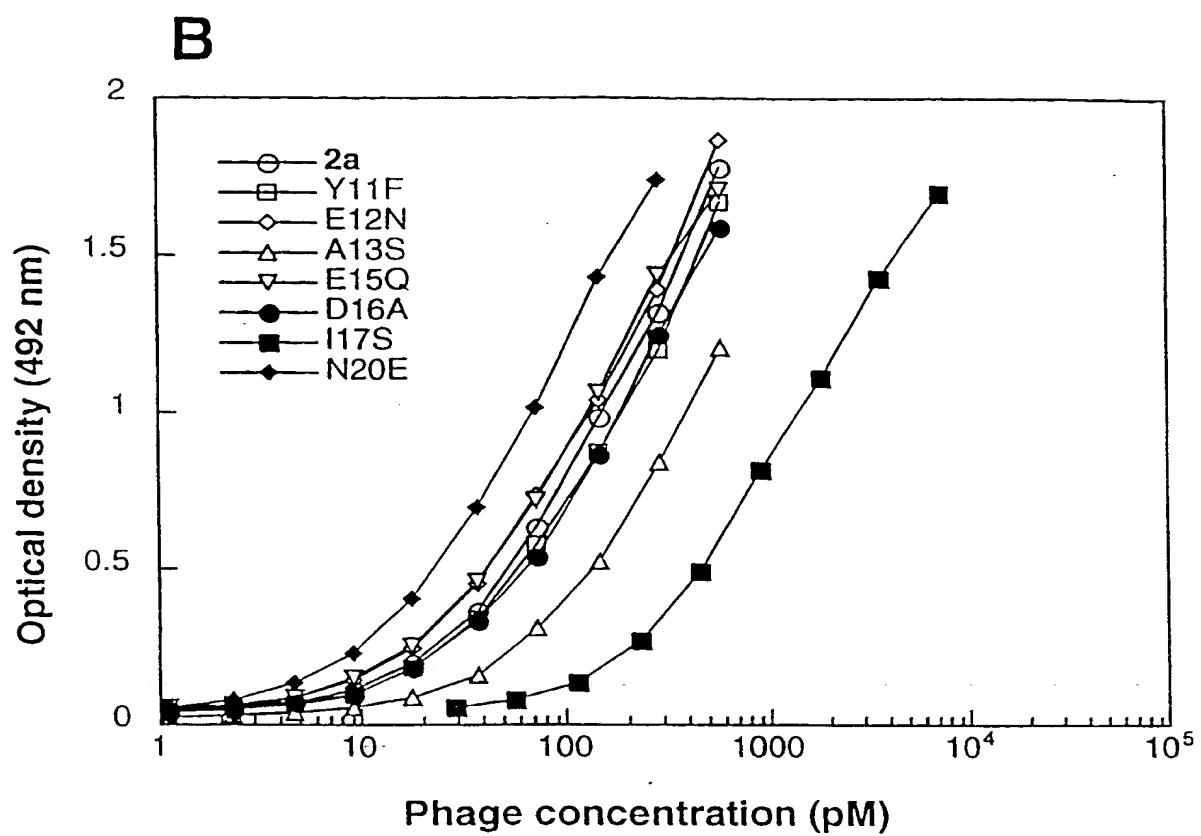


Figure 12B

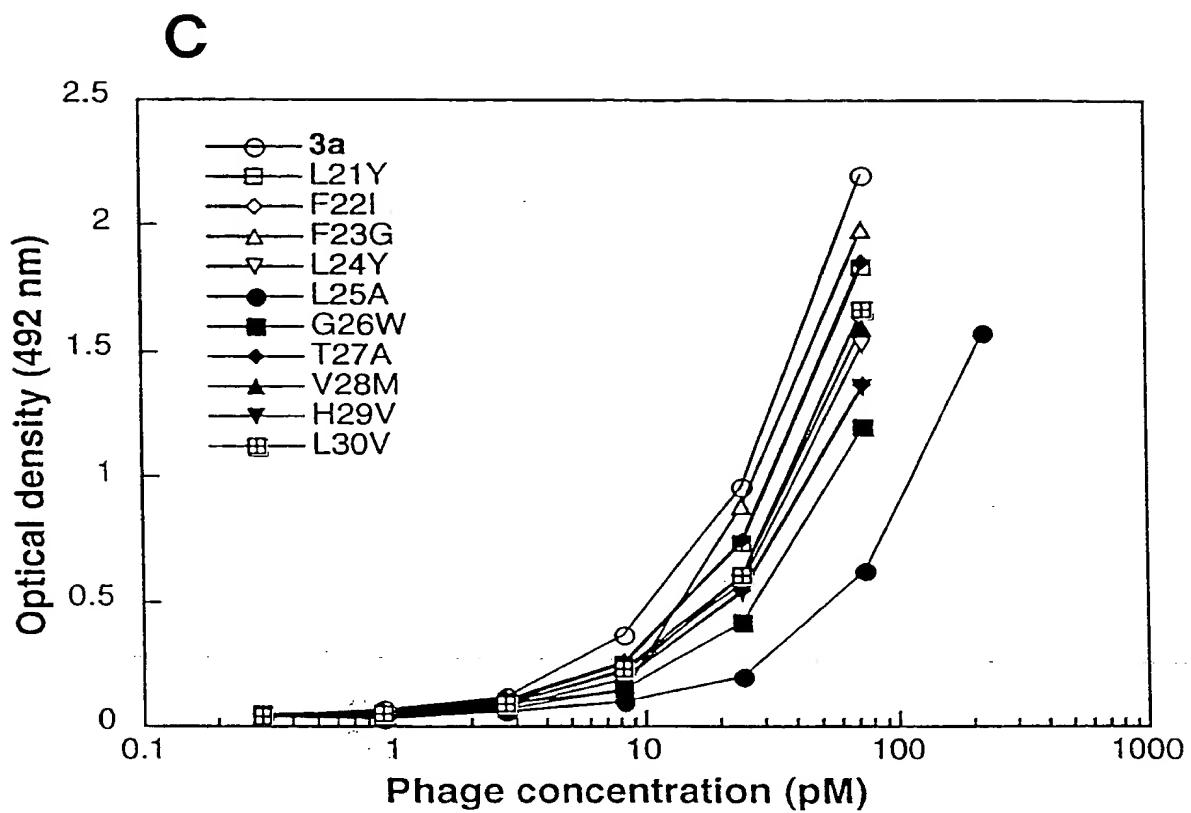


Figure 12C

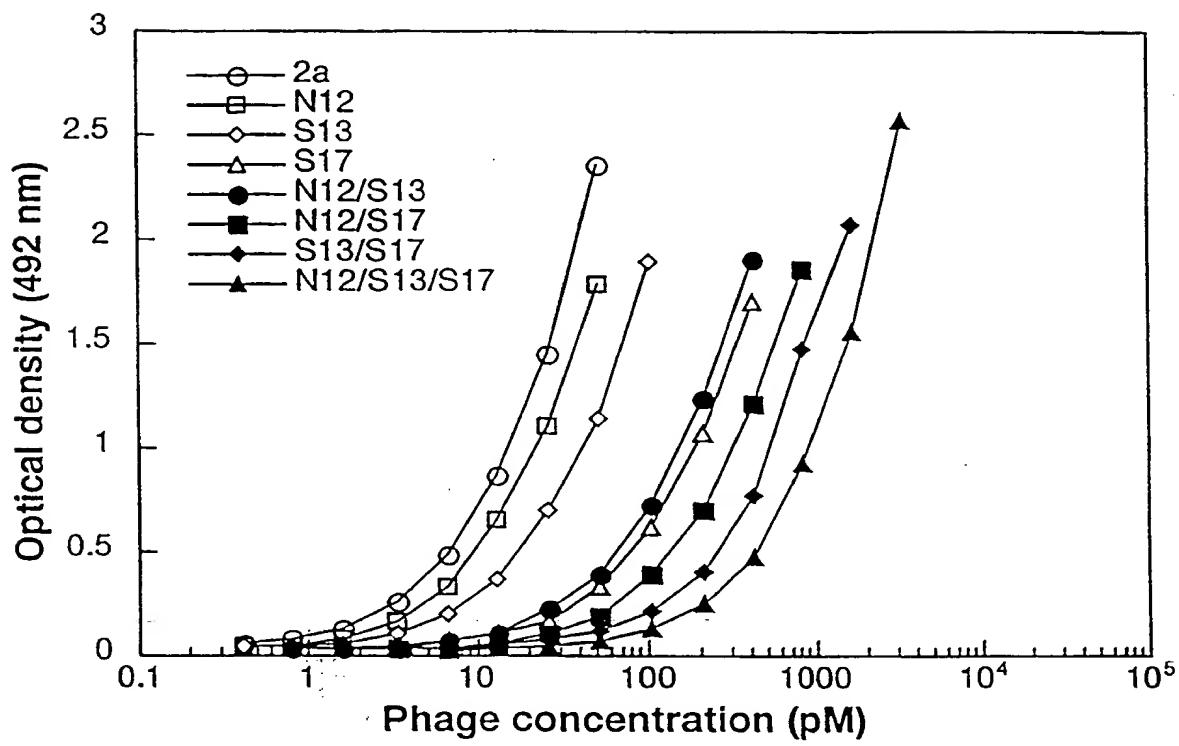


Figure 12D

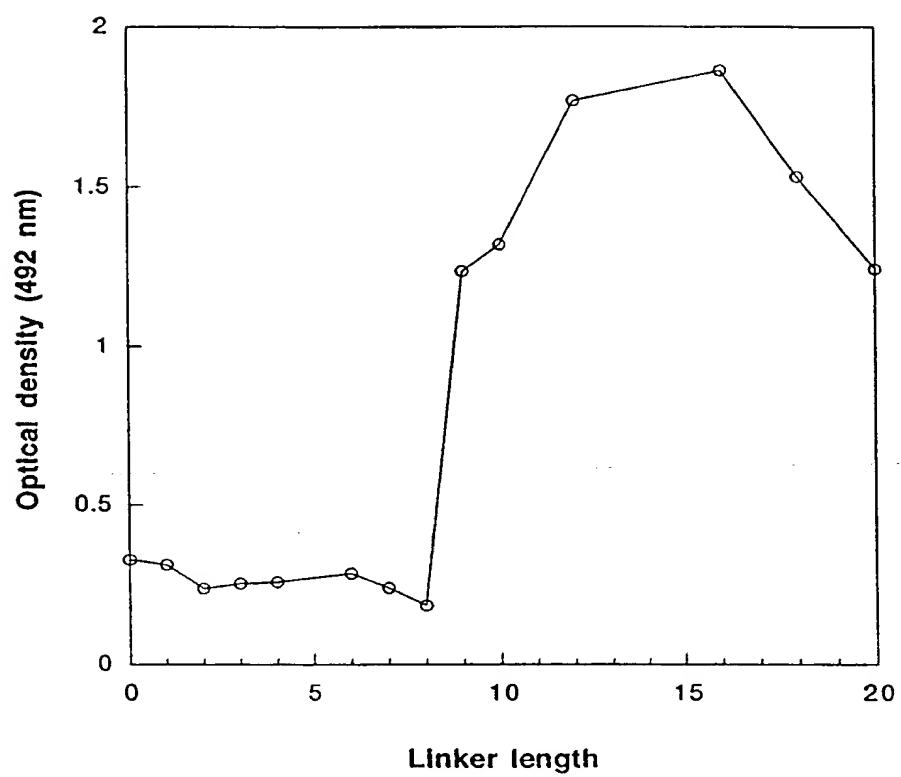


Figure 13

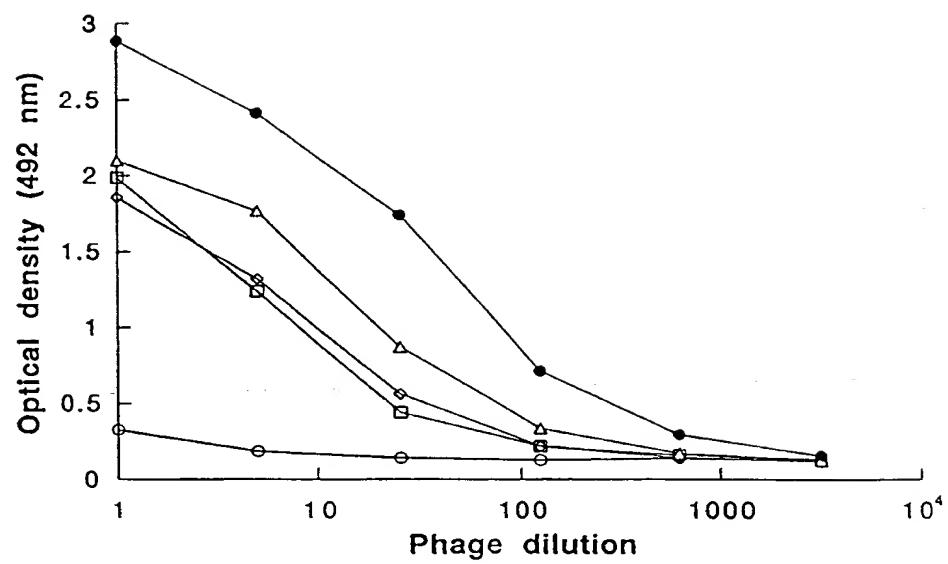


Figure 14

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
L	NWT	NKT	NWT	NYT	NWT	NKT	NWT	NWT	NWT	NWT	NKT	NWT	NKT	NWT	NWC	NKT	NWT	NWT (SEQ ID NO. 206)	
I	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
B	L	L	L	L	L	L	L	L	L	L	M	L	L	L	L	L	L	L	
R	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
A	N	C	N	S	S	C	N	N	N	N	N	R	S	Y	C	N	N	N	
R	H	R	H	P	P	R	H	H	H	H	H	G	P	H	R	H	H	H	
Y	N	S	N	T	T	S	N	N	N	N	N	T	T	N	S	N	N	N	
D	G	D	A	A	G	D	D	D	D	D	D	A	A	D	G	D	D	D	
P12-1	GTT	TTT	GTT	TCT	GTT	GAT	GTT	GAT	AAT	AAT	TGG	ATT	TGG	GTC	GCT	ATT	GTT (SEQ ID NO. 167)		
P12-2	V	F	S	F	GCT	GTT	ATT	GAT	AAT	TTT	TAT	TGG	GGG	TTT	TAC	GCT	I	V (SEQ ID NO. 268)	
P12-3	CAT	AGT	S	L	A	V	I	D	D	N	F	Y	W	V	F	Y	G	V (SEQ ID NO. 269)	
P12-4	CTT	TTT	TAT	CCT	GTT	AGT	GTT	CAT	ATT	GTT	ATT	CGG	TTT	TGG	TCT	CTC	TAT	GTT (SEQ ID NO. 270)	
P12-5	L	F	Y	P	V	S	V	H	I	V	R	F	L	S	L	F	L	V (SEQ ID NO. 271)	
P12-6	CTT	AGT	GTT	GTT	CGT	GAT	CTT	ATT	TAT	AAT	GTT	ATG	TTT	CAC	GTT	GTT	GTT	AAT (SEQ ID NO. 272)	
	L	S	V	V	R	D	L	I	Y	N	V	M	F	H	V	V	N (SEQ ID NO. 273)		
	CTT	GGT	TTT	TCT	ACT	CGT	GTT	GAT	GAT	GAT	TGG	CTT	ATG	GTT	AAC	AGT	TTT	GAT (SEQ ID NO. 274)	
	L	G	F	S	T	R	V	L	V	D	W	L	M	V	N	S	F	D (SEQ ID NO. 275)	
	TAT	TTT	GCT	TTT	AGT	ATT	GAT	CTT	TTT	AGG	CTT	TGG	CTT	TAC	TTT	GTT	V	AAT (SEQ ID NO. 276)	
	Y	F	L	A	F	S	I	I	D	L	F	R	L	W	L	Y	F	N (SEQ ID NO. 277)	

Figure 15

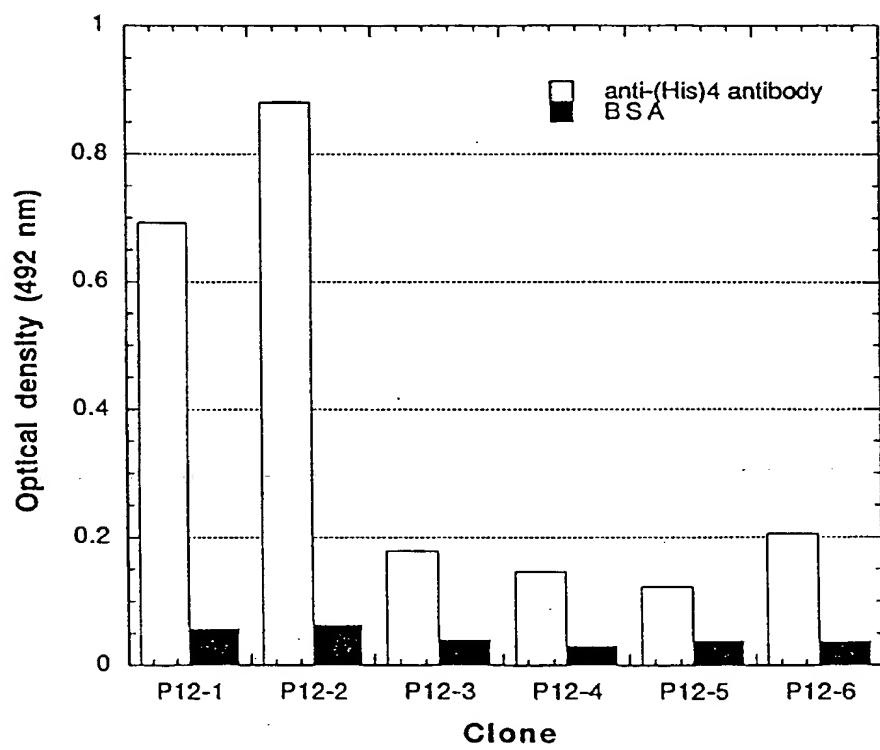


Figure 16

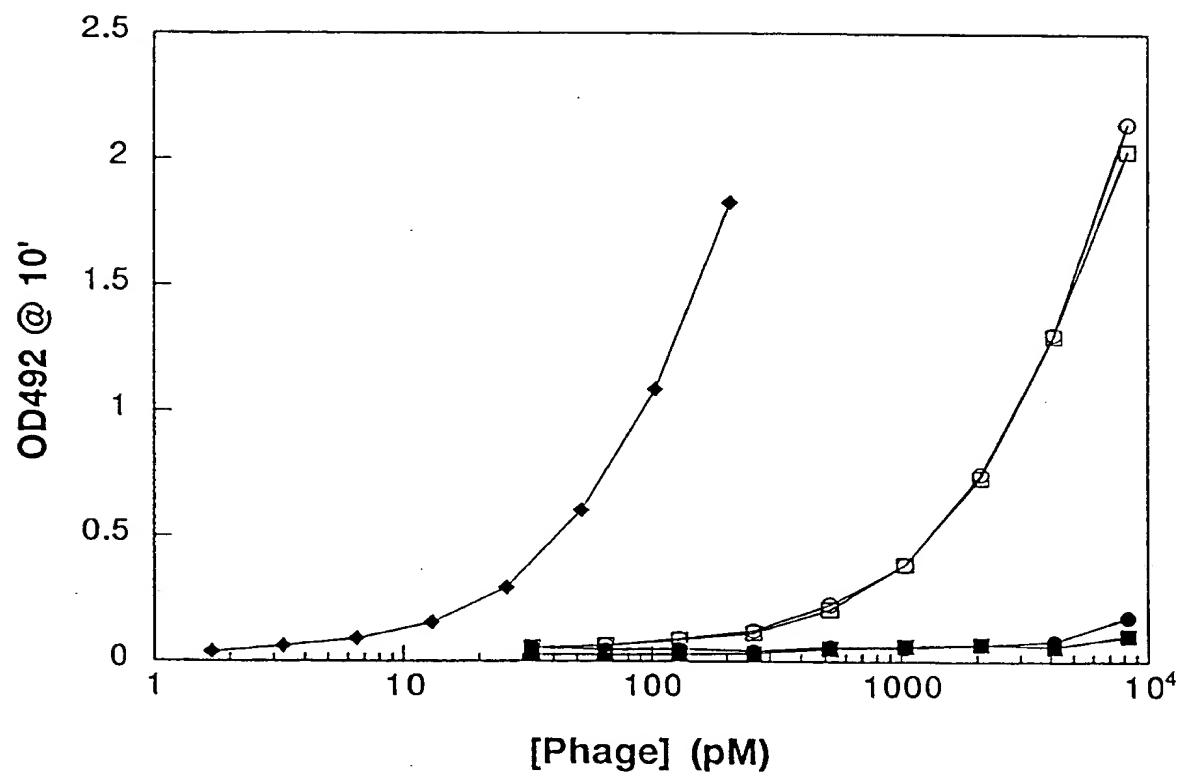


Figure 17

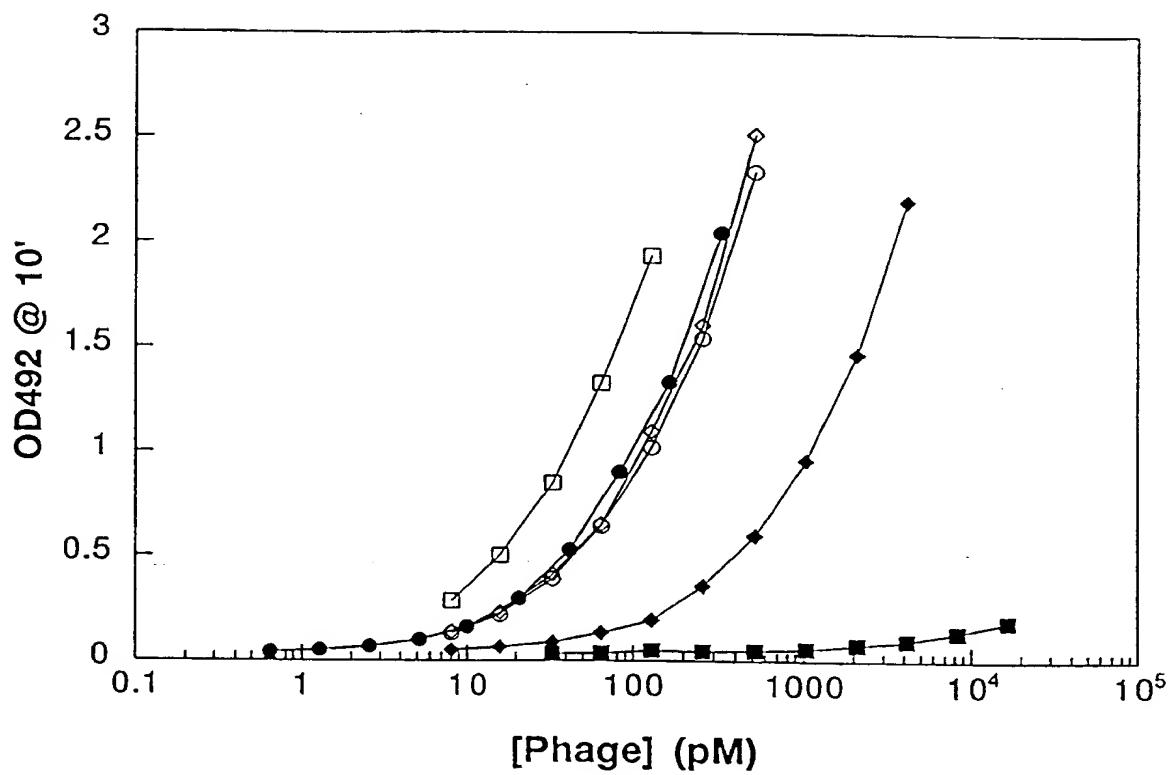


Figure 18